

BUSHTEC VERTICAL RECEIVER HITCH SYSTEM
(2014-2017)

READ ALL INSTRUCTIONS BEFORE YOU START

ATTENTION INSTALLER: THESE INSTRUCTIONS MUST BE GIVEN TO
THE END USER!!!

HARLEY-DAVIDSON MOTOR COMPANY, HARLEY-DAVIDSON MOTORCYCLES AND/OR ANY AFFILIATE OR SUBSIDIARY HAS NEITHER APPROVED OR ENDORSED *Bushtec Products Corporation*, ITS PRODUCTS, TRAILERS OR HITCHES. USE OF A TRAILER OR TRAILER HITCH ON ANY MOTORCYCLE COULD VOID YOUR WARRANTY AND MAY INCREASE YOUR CHANCE OF INJURY OR DEATH IN AN ACCIDENT SITUATION.

Valuable information is distinguished by the following notations:

NOTE: Provides key information to make procedures easier and clearer.

CAUTION: INDICATES SPECIAL PROCEDURES THAT MUST BE FOLLOWED TO AVOID DAMAGE TO THE MOTORCYCLE, TRAILER OR ACCESSORIES.

WARNING: INDICATES SPECIAL PROCEDURES THAT MUST BE FOLLOWED TO AVOID SEVERE INJURY AND/OR DEATH TO A MOTORCYCLE OPERATOR OR OTHERS.

WARNING: THE *BUSHTEC VERTICAL RECEIVER HITCH* SYSTEM FOR 2009 FLH & FLT MODELS HAS BEEN EXCLUSIVELY DESIGNED FOR USE ONLY ON A STOCK H-D FLH OR FLT MODEL. IT WILL NOT WORK ON ANY OTHER MOTORCYCLE. ANY MODIFICATION TO ANY PART OF THIS HITCH, INCLUDING BUT NOT LIMITED TO ALTERING THE SUPPLIED HARDWARE OR IMPROPER INSTALLATION COULD CAUSE INJURY OR DEATH AND IMMEDIATELY VOIDS ALL WARRANTIES.

WARNING: INSTALLATION OF THIS HITCH SHOULD BE PERFORMED BY A QUALIFIED MECHANIC. THESE INSTALLATION PROCEDURES ARE ONLY A GUIDE AND SHOULD BE USED IN CONJUNCTION WITH THE FACTORY SERVICE MANUAL AND THE NECESSARY MECHANICAL SKILLS.

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WARNING: THE END USER OF THIS PRODUCT ASSUMES ALL LIABILITY AND RESPONSIBILITIES THAT MAY ARISE DUE TO BUT NOT LIMITED TO, NEGLIGENCE FROM IMPROPER INSTALLATION OR USE, INCLUDING OVERLOADING, EXCEEDING THE RECOMMENDED LOAD LIMITS AND IMPROPER MAINTENANCE.

WARNING: ALL HITCH HARDWARE SHOULD BE CHECKED PRIOR TO EACH USE. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.

BUSHTEC VERTICAL RECEIVER HITCH SYSTEM
For Road King, Road Glide, and CVO Ultra Classic
CONTENTS: (2014)

- 1 V1,V2 OR V3 Receiver Center Section (3/8-16 x 1" GR8HH Bolt & Jam Nut Installed)
- 2 Support Struts, pair
- 1 ½" Receiver Lock
- 1 Chrome Hitch Head w/ 1 7/8" Stainless Steel Ball
Or
- 1 Chrome Bushtec Receiver Head w/ Stainless Steel Lock, 2 Keys & Cover
- 1 Instructions

1. HARDWARE: PLEASE USE LOCTITE ON ALL BOLTS

- 4 **5/16 flat washers/slotted holes on struts**
- 2 5/16-18 x 1 1/2hex GR8HH Bolt
- 6 5/16-18 x 1 ¾ inch Low Profile Cap Head Allen Bolt
- 10 ¼ inch Flat Washer
- 2 5/16-18 Nylock Nut
- 7 3/8-16 X 1 inch GR8HH Bolt
- 4 3/8-16 inch Nylock Nut
- 4 Long ¾ inch Black Spacer (.75 inch)
- 2 USE THE HONDA 1800-SPACER
- 1 3/8-16 standard nut (JAM NUT)
- 2 3/8 FLAT WASHERS(FOR THE CENTER SLIDER)

CAUTION: CARE MUST BE OBSERVED WHEN OPENING AND CLOSING SADDLEBAG LID ON MOTORCYCLE EQUIPPED WITH TRAILER HITCH. DO NOT EXTEND HINGE ON SADDLEBAG FURTHER THAN NECESSARY TO ALLOW RELEASE OR ENGAGEMENT OF SADDLEBAG LID TABS WHEN OPENING AND CLOSING. FAILURE TO DO SO MAY RESULT IN DAMAGE TO

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THE REAR EDGE OF THE SADDLEBAG LID AS YOU CAN DRIVE THE EDGE INTO THE BOLTS SECURING THE TOP OF THE STRUT. MORE THAN ADEQUATE CLEARANCE EXISTS TO OPEN AND CLOSE THE SADDLEBAG LID WITHOUT DAMAGING THE FINISH ON THE INSIDE EDGE OF THE SADDLEBAG LID WITH THE TRAILER HITCH INSTALLED!

CAUTION: THESE STEPS MUST BE PERFORMED IN THE FOLLOWING ORDER:

NOTE: The Bushtec Vertical Receiver Hitch for the 2009 Road King, Road Glide and CVO Ultra Classic models without rear fender bumper comes with Version 2 of the Bushtec hitch for 2009-2014 FLH & FLT models. The side struts are standard on all versions, with the Road King, Road Glide, and CVO Ultra Classic using three bolts and spacers each side for mounting at the strut top.

HITCH INSTALLATION

1. Place motorcycle on level ground.
2. Remove left and right saddlebags and set aside.
3. Remove seat.
4. If equipped with quick release backrest or tour pack, remove from motorcycle and set aside.
5. Locate and remove one bolt on each side that connects the saddlebag lower support that the saddlebag sits on to chrome fender support plate at bottom rear of fender. Looking at bike from behind, the bolt is located above the muffler, between the muffler hanger and fender, running from back to front (see photo 1).
6. Install supplied 5/16-18 x 1 1/2-inch Grade 8 Hex bolts with flat washer in place of stock bolts removed in previous step. Bolt is installed from back toward front.
7. Install center section onto bolts installed in previous step on forward facing side of saddlebag bracket via tab ears. Secure with flat washer and Nylock nut. Do not tighten.
8. Remove three bolts on right side of motorcycle, one securing saddlebag support to rear fender frame, one forward and one rearward of it. These bolts are visible via holes in the chrome rear fender frame cover. (See picture 2)
9. Using supplied low-profile cap head socket head bolts and ¼ in flat washer on each bolt, omitting flat washer on bolt used in hole at front, install strut onto bike. Bottom of strut extends toward rear of bike, with strut running at angle parallel to saddlebag support tube. Bottom of strut fits to outside of center section. The supplied spacers go between the back side of the strut and the rear fender frame. (See picture 3).

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NOTE: The front and rear hole spacers are not used on a motorcycle equipped with quick release docking hardware. Only the middle hole spacer corresponding to the saddlebag support mount is used with docking hardware.

10. Repeat previous step for left side of motorcycle installing left side strut and supplied hardware. When removing bolts from left side and installing strut do not reattach bracket holding air valve.
11. Using 4 supplied 3/8-16 x 1-inch Grade 8 Hex bolts and Nylock nuts attach struts to outside of center section. Bolts are installed from inside out, with Nylock nut away from tire. Do not tighten. On struts with slotted holes, place a flat washer on the outside of the strut before installing Nylock nut.

CAUTION: DURING THE FOLLOWING STEPS, THE SCHRADER VALVE FOR THE REAR AIR SHOCK ADJUSTMENT WILL BE RELOCATED. TAKE CARE TO NOT BEND OR KINK THE AIR LINES AS THIS CAN RESULT IN DAMAGE, LEAKING, AND FAILURE OF THE AIR LINES.

12. Remove nut securing Schrader valve for rear air shock adjustment and remove bracket. Pass Schrader valve around back side of left side rear shock being careful not to kink either air line. Install threaded end of Schrader valve through hole in rounded end of supplied bracket. Do not tighten.
13. Note installed position of left side front saddlebag quick release bracket. Remove hex bolt securing bracket to frame. Install Schrader valve bracket to outside of left side front saddlebag quick release bracket using stock bolt and washer. Tighten until there is tension on the bracket and rotate factory bracket into approximate original position. The bracket should be facing straight upward and will be adjusted for final fitment in later step.
14. Center square receiver tube in center section on rear tire and tighten two bolts securing center section to saddlebag subframe. At outside of bottom rear of fender.
15. Tighten 4 Hex bolts securing bottom strut to center section.
16. Tighten 6 bolts securing top of strut to fender frame.
17. Reinstall left saddlebag and install rear quarter turn quick release. Adjust front saddlebag quick release bracket to align hole in bag with hole in bracket and secure with quarter turn quick release. Rotate bracket with Schrader valve clockwise toward top of left shock. Check for clearance on airline exiting left shock to insure that the air line is not kinked or damaged. Tighten bolt securing bracket until snug and bracket is secure. Remove left saddlebag.

CAUTION: CARE MUST BE OBSERVED WHEN OPENING AND CLOSING SADDLEBAG LID ON MOTORCYCLE EQUIPPED WITH TRAILER HITCH. DO NOT EXTEND HINGE ON SADDLEBAG FURTHER THAN NECESSARY TO ALLOW

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RELEASE OR ENGAGEMENT OF SADDLEBAG LID TABS WHEN OPENING AND CLOSING. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE REAR EDGE OF THE SADDLEBAG LID AS YOU CAN DRIVE THE EDGE INTO THE BOLTS SECURING THE TOP OF THE STRUT. MORE THAN ADEQUATE CLEARANCE EXISTS TO OPEN AND CLOSE THE SADDLEBAG LID WITHOUT DAMAGING THE FINISH ON THE INSIDE EDGE OF THE SADDLEBAG LID WITH THE TRAILER HITCH INSTALLED!

WIRING INSTALLATION

1. In preparation of wiring installation, remove electrical module sitting on top of battery by pushing outward on tabs to front and rear of bike, then slide module out of holder toward right side of bike. Remove two Torx bolts securing battery cover tray to frame behind battery. Slide tray forward to disengage from front tab. Do not lift rear of tray upward as this will not allow tray to clear front tab-keep the bolt tabs against the frame at rear when sliding forward. Lift and rotate to side.
2. Install wiring harness with sufficient slack at rear to allow trailer harness to connect to bike harness without bind. Secure to hitch and run harness up strut or saddlebag support to insure clearance on rear tire, swingarm and any other moving parts. Route up to underseat area.
3. Locate 8 pin plug securing rear fender harness to main harness on top of rear fender behind battery box and disconnect. Install subharness with matching 8 pin plugs between two halves of factory plug and reconnect. If motorcycle is equipped with any type of electrical module to convert rear turn signal function to running and/or brake, in addition to turn signals, the module should be on the side of the subharness closest to the rear fender plug.

NOTE: Installing the subharness after any module designed to modify rear turn signal function will result in improper isolator function and improper taillight function on the trailer.

4. Connect the 4 pin plug from the subharness to the 4 pin plug from the Electronic Relay Isolator package. Find a secure location for the relay that will not interfere with the seat installation or reinstallation of any factory components. There is normally sufficient space to accommodate the Relay forward of the battery under the rear of the gas tank

CAUTION: DO NOT ALLOW ANY WIRES FROM THE RELAY OR HARNESS TO CONTACT ANY PART OF THE ENGINE, EXHAUST OR ANY MOVING PARTS. DAMAGE TO THE WIRING COULD RESULT.

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5. Route red wire to positive terminal on battery and connect using supplied ring terminal. Route black wire with inline fuse to negative terminal on battery and connect using supplied ring terminal.

6. Connect solid color output wires from Electronic Relay Isolator package to bike side harness running to rear of motorcycle, with color and functions corresponding as follows;

<u>RELAY OUTPUT</u>	<u>FUNCTION</u>	<u>BUSHTEC HARNESS</u>
Green	Tailights	Green
Blue	Brake	Blue
Brown	Left Turn	Brown
Yellow	Right Turn	Yellow
Black	Ground	White
<u>RELAY OUTPUT</u>	<u>FUNCTION</u>	<u>BUSHTEC HARNESS (CON'T)</u>
	Interior Light	Black

It is normal Bushtec procedure to connect the black wire in the Bushtec harness with the green wire in the Bushtec harness to the green output wire from the relay.

If you are connecting a trailer other than a Bushtec to the relay, use the above chart for relay output colors and functions and cross reference with color code and function of your trailer wiring. If your trailer has a four wire electrical harness, a trailer light converter will be required in ADDITION to the Electronic Relay Isolator package and is not included with the hitch package.

7. Make sure that all wires are routed clear of moving or hot parts and secure to frame and or factory harness so there is sufficient clearance for reinstallation of seat and other components. Reinstall battery cover tray by sliding over front tab and align holes for bolts to secure. Reinstall factory bolts and tighten until snug. Reinstall electrical module into tray and lock into place with tabs.

8. Check functions of output harness before continuing reassembly. Reinstall seat and saddlebags.

HITCH HEAD INSTALLATION AND TRAILER ATTACHMENT

1. Familiarize yourself with the lock operation per the manufacturer's instructions.

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2. Loosen jam bolt so that end of bolt does not protrude into receiver box tube center section. Turn jam nut toward head of bolt.
3. Slide hitch head into the receiver tube on center section of hitch. Align hole in hitch head with hole in receiver tube and insert lock shackle. Secure with lock onto end of lock shackle. Using wrench, tighten jam bolt until snug and hitch head does not move. Lock in place with jam nut by tightening against receiver tube.

CAUTION: DO NOT OVERTIGHTEN. USE OF EXCESSIVE FORCE ON JAM BOLT CAN RESULT IN DAMAGE TO HITCH HEAD AND MOVEMENT OF HITCH HEAD.

4. (*BUSHTEC* APPLICATION) Before securing trailer to motorcycle, familiarize yourself with the operation of the Stainless-Steel lock. The lock assembly has a large barrel style key. The space between the pins will correspond between the lock and key. Insert key and turn ¼ turn clockwise to unlock. Turn ¼ turn counterclockwise to lock and release key.
5. Set the heim joint onto the hitch pin with the hole in the captured bearing over the pin. The body of the heim joint should be parallel to the hitch head. If the heim joint is rotated too far, the heim joint will not seat fully on the pin and the lock will not fully engage. Place the key into the lock and turn ¼ turn clockwise. Place the lock on top the hitch pin against the heim joint, turn the key to ¼ turn counterclockwise and remove key. Lift up on the lock to insure lock is engaged on the hitch pin. Place the black rubber cover over the lock to keep keyway free from debris.

WARNING: THE KEY CAN BE REMOVED REGARDLESS OF WHETHER THE LOCK IS ENGAGED. CHECK TO INSURE ENGAGEMENT BY PULLING UP ON THE LOCK.

6. Remove the dead plug from the end of the bike harness and plug the trailer in. If possible, the bike side harness should be run over top of the neck to avoid dragging or damage to the harness. Connect the safety chain clip to the catch on the underside of the hitch head, underneath the pin. RE-CHECK ALL TRAILER CONNECTIONS!
7. (ALL OTHER APPLICATIONS) With the hitch head installed into the receiver tube, install the ball onto the hitch head per the manufacturer's instructions.
8. With the shackle of the ball coupler in the open position, place the ball coupler down over the hitch ball. Secure the coupler latch. Check that the trailer coupler is adjusted properly, well lubricated and in working order.

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WARNING: THE END USER ASSUMES ALL LIABILITY AND RESPONSIBILITY IN THE USE OF ANY TRAILER. PROPER USE, MAINTAINENCE, AND ALL WARNINGS ASSOCIATED WITH TRAILERING ARE THE RESPONSIBILITIES OF THE RESPECTIVE TRAILER'S MANUFACTURER. BUSHTEC'S TOTAL LIABILITY WILL BE LIMITED TO THE INITIAL PURCHASE PRICE OF THIS PRODUCT OR REPLACEMENT OF THIS PRODUCT AT OUR DISCRETION.

9. Plug your trailer into the bike harness. Attach your safety chain to the connection points on the hitch center section plate. Use of a quick link is suggested to aid in safety chain connection and to reduce potential for damage to fender finish. **CHECK ALL TRAILER CONNECTION.**

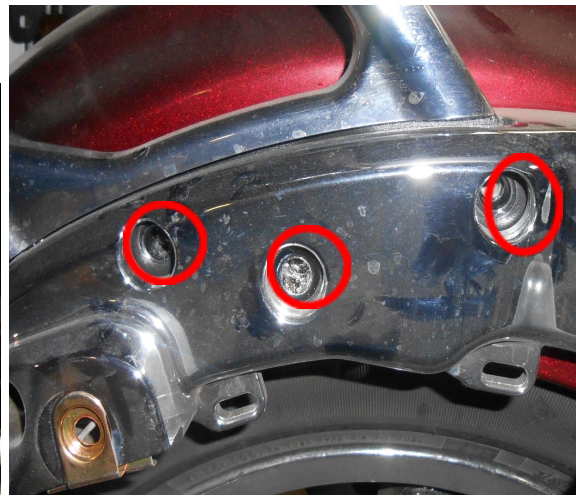
WARNING: DUE TO THE NATURE OF TOWING A TRAILER AND THE ENGINEERING INVOLVED WITH THIS HITCH OR ANY MOTORCYCLE HITCH, ALL HARDWARE MUST BE CHECKED BEFORE, DURING AND AFTER YOU TOW TO INSURE THE PROPER WORKING ORDER OF THIS PRODUCT!

TOWING CAPACITY - 350 LBS. MAXIMUM GVWR
TONGUE WEIGHT CAPACITY - 70 LBS. MAXIMUM

All Manufacturers names, model designations, brand names, trademarks and registered trademarks are the property of their respective holders.

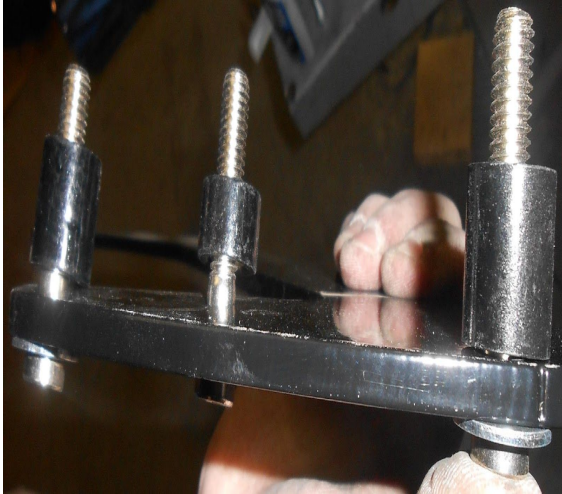


Step 5- Bolt connecting Lower Saddlebag Support to Rear Fender Support Plate highlighted

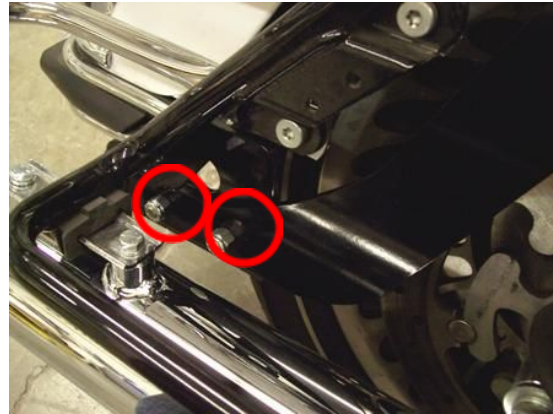


Step 8- Bolt Positions Seen on Right Side of Motorcycle- Rearmost Bolt Position not used for hitch Installation Highlighted

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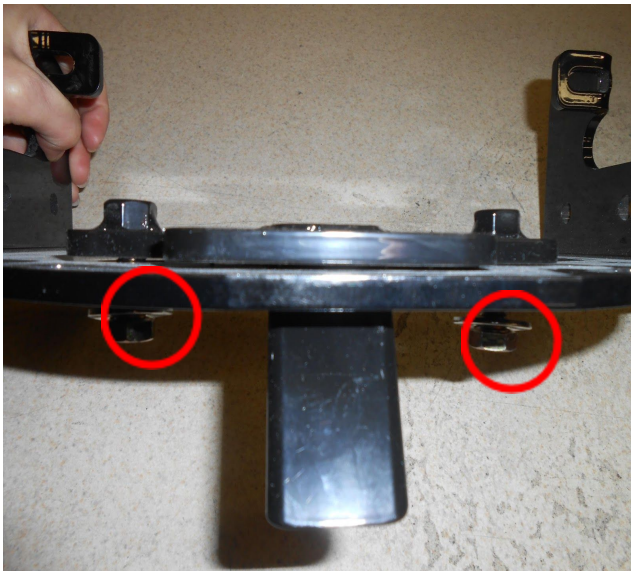


Step 13- Ultra Classic & Electra Glide Bolts and Docking Hardware



Step 8- Top of Strut Installation with 3 Bottom of Strut Installed to Center Section

To install your slider to the center section please see picture below. You will use 2 3/8 – 1 bolts and 2 3/8 flat washers provided. Be sure before you tighten the bolts to add lock tite to each bolt.



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